

1 **IN THE UNITED STATES PATENT AND TRADEMARK OFFICE**

2
3 APPLICATION NO.: 10/712,902

EXAMINER: Merant, Guerrier

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ART UNIT: 2117

5 INVENTOR: John Warren Maly

CONFIRMATION NO.: 9445

6 ATTORNEY DOCKET NUMBER: 200207608-1

7
8 **APPEAL BRIEF UNDER 37 CFR § 41**

9
10 Commissioner for Patents

11 PO Box 1450

12 Alexandria, VA 22313-1450

13
14 Dear Sir:

15
16 An appeal is taken from the decision of the examiner mailed 12/01/2008. A
17 Notice of Appeal is being filed concurrently, in accordance with 37 CFR § 41.31.

1 **REAL PARTY IN INTEREST**

2

3 The real party in interest for the application is Hewlett-Packard

4 Development Company, L.P., a Texas limited partnership that is a wholly-owned

5 affiliate of Hewlett-Packard Company, a Delaware corporation headquartered in

6 Palo Alto, CA.

7

8 **RELATED CASES**

9

10 A prior Appeal Brief for the present application (10/712,902) was filed on

11 03/14/2008. In response, a non-final Office Action was mailed on 05/28/2008.

12 There are no other related cases.

13

14 **JURISDICTIONAL STATEMENT**

15

16 The Board has jurisdiction under 35 USC § 134(a). The examiner mailed a

17 final rejection on 12/01/2008, setting a three-month shortened statutory period for

18 response. The time for responding to the final rejection expires on 03/01/2009. A

19 Notice of Appeal is being filed concurrently with this Appeal Brief on 01/27/2009.

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TABLE OF AUTHORITIES

17	
18	
19	
20	None

1 **STATUS OF AMENDMENTS**

2

3 No amendments have been filed after the final rejection.

4

5 **GROUND OF REJECTION**

6

7 (1) Rejection of claims 4 and 22 under 35 USC §101 as directed to non-statutory

8 subject matter.

9 (2) Rejection of claims 1, 4, and 6-28 under 35 USC § 103(a) as being

10 unpatentable over US Patent Number 5,903,475 (Gupte) in view of US Patent

11 Number 3,614,606 (Giedd).

12

13 **STATEMENT OF FACTS**

14

15 1. In the rejection of claims 1 and 23-28, for the element of "creating a

16 transaction record corresponding to said input signal", the examiner cites Gupte,

17 column 9, lines 8-13, which reads as follows: "The Vector Capture program

18 generates two output modules: a capture module 354 and a test bench module 356.

19 The capture module is an HDL file that is utilized during a system simulation 358

1 to capture the input and output vectors around the ASIC. Typically, the system
2 simulation utilizes a behavioral HDL representation of the ASIC."

3
4 2. In the rejection of claims 1 and 23-28, for the element of "generating an
5 expected output signal, corresponding to said transaction record", the examiner
6 cites Gupte, column 9, lines 13-18; column 6, lines 41-64; column 7, lines 20-35;
7 column 8, lines 56-67; column 9, lines 1-57; column 10, lines 5-10.

8 Column 9, lines 13-18 read as follows: "Typically, the system simulation
9 utilizes a behavioral HDL representation of the ASIC. During system simulation
10 358, the output vectors of the ASIC are captured as "golden" vectors 360. The
11 golden vectors represent the output of the ASIC during system simulation."

12 Column 6, lines 41-64 describe producing the behavioral design
13 specifications of an ASIC, which is then simulated within the customer's system
14 environment.

15 Column 7, lines 20-35 describe simulating an ASIC in a stand-alone
16 environment, and in a customer's system environment, and comparing the outputs.

17 Column 8, lines 56-67 are part of a file in Verilog HDL for the I/O
18 specifications of an ASIC.

19 Column 9, lines 1-57 discuss capturing the input and output vectors around
20 an ASIC during system simulation, and then using those captured vectors in a

1 stand-alone simulation. Also discussed is Fig. 6, which is high level flow chart of
2 the vector capture program.

3
4 3. In the rejection of claims 1 and 23-28, the examiner cites Giedd, abstract,
5 for signaling an error if an agent did not produce an output signal correctly.

6 Giedd, abstract, teaches applying a test pattern to a logic circuit under test,
7 and an identical test pattern to a reference logic circuit, comparing the outputs of
8 the test circuit and the reference circuit, and generating an error signal when the
9 two outputs are not matched.

10
11 4. In the rejection of claim 7, for the element of "monitoring at least one
12 input of a memory agent", the examiner cites Gupte, figures 2-9; column 6, lines
13 41-64; column 7, lines 20-35; column 8, lines 56-67, column 9, lines 1-57; column
14 10, lines 5-10.

15 Figures 2-9 illustrate a system and method for simulation of a system that
16 includes an ASIC as part of the system, and capturing simulated signals to the
17 simulated ASIC, and capturing simulated outputs from the simulated ASIC, for use
18 in a stand-alone simulation of just the ASIC.

19 Each of the citations to the text in Gupte is discussed in Statement of Facts
20 #2.

1
2 5. In the rejection of claim 13, for the element of "creating a transaction
3 record to contain information relating to a memory transaction involving said
4 agent", the examiner cites Gupte, column 15, lines 35-50.

5 Gupte, column 15, lines 35-50 describes compilation of simulation code and
6 determining which modules to add to a library to be synthesized, and whether
7 modules should be compiled separately or in groups.

8
9 6. In the rejection of claim 15, for the element of "program code for storing
10 expected data associated with said expectation, said expected data being received
11 in a plurality of separate incoming transmissions in said stimulus, said expected
12 data being expected to be transmitted by said agent in a plurality of separate
13 outgoing transmissions in said event", the examiner cites Gupte, column 18, lines
14 19-39.

15 Gupte, column 18, lines 19-39 describe execution of an expert system that in
16 turn checks out the proper version of HDL simulation code and runs the code.

ARGUMENT

(1) REJECTION OF CLAIMS 4 AND 22 UNDER 35 USC §101 AS DIRECTED
TO NON-STATUTORY SUBJECT MATTER.

CLAIM 4

In response to the examiner's rejection of claim 4 under 35 USC § 101 for the first time in the final rejection dated 12/01/2008, page 3, appellant's response includes a new argument which has not been previously presented to the examiner, as follows:

Claim 4 specifies an apparatus comprising at least one computer readable medium. In the Office Action dated 12/01/2008, page 3, the examiner asserts that claim 4 is "directed to an intangible means such as an infrared transmission." The claim is not limited to infrared transmission or "intangible means". The specification at page 32, line 23 through page 33, line 14, contains a list of examples of storage media, including magnetic disks, optical disks, and semiconductor memory devices. The mere fact that one example embodiment in the specification may be non-statutory does not make a claim non-statutory for all possible embodiments. From MPEP 2106(C), limitations appearing in the

1 specification but not recited in the claim should not be read into the claim. The
2 examiner has not cited any authority for a claim interpretation limiting the claim to
3 a single embodiment among many, and has not cited any authority for rejecting a
4 claim under 35 USC §101 just because one example embodiment among many
5 examples in the specification may be non-statutory.

6
7 CLAIM 22

8
9 In response to the examiner's rejection of claim 22 under 35 USC § 101 for
10 the first time in the final rejection dated 12/01/2008, page 3, appellant's response
11 includes a new argument which has not been previously presented to the examiner,
12 as follows:

13 In the Office Action dated 12/01/2008, page 3, regarding claim 22, the
14 examiner asserts: "There are no physical devices for performing the functionalities
15 of the claim. Therefore, the claim is directed to an intangible means such as
16 software per se." First, the examiner has not accurately stated the legal threshold
17 for a 35 USC § 101 analysis. Second, the examiner appears to be incorrectly
18 asserting that software is per se unpatentable. Third, Claim 22 is written in means
19 plus function format. From MPEP 2106(C), and MPEP 2181(II), a claim in means
20 plus function format is construed to cover the corresponding structure described in

the specification and equivalents thereof. From page 4, lines 22-34, the term "architecture" refers to the structure and organization of a memory agent in a computer system, and that of software and firmware in a computer system, including the instruction set of a processor in a computer system. From page 5, lines 3-11, the term "agent" refers to any component in a system that receives incoming signals or transaction and generates outgoing signals or events as a result. In one example embodiment, the agent comprises a memory agent in a computer system. From page 5, lines 12-20, a transaction corresponds to an entire memory operation. From page 5, lines 21-25, the checker may be a software application or may be an electronic circuit.

(2) REJECTION OF CLAIMS 1, 4, AND 6-28 UNDER 35 USC § 103(A) AS BEING UNPATENTABLE OVER US PATENT NUMBER 5,903,475 (GUPTE) IN VIEW OF US PATENT NUMBER 3,614,606 (GIEDD).

CLAIMS 1, 4, 6, 22 AND 23

For purposes of this appeal only, and regarding the rejection under 35 USC § 103(a) only, claims 4, 6, 22, and 23 stand or fall with claim 1.

1 In response to the examiner's rejection of claims 1, 4, and 22 under 35 USC
2 § 103(a) as being unpatentable over Gupte and Giedd, appellant's response
3 includes a new argument which has not been previously presented to the examiner,
4 as follows:

5 Exemplary language for claims 1, 4 and 22 may be found in claim 1, as
6 follows. Claim 1 specifies: "... creating a transaction record corresponding to said
7 input signal; generating an expected output signal, corresponding to said
8 transaction record, based at least in part on said input signal; ...".

9 Gupte and Giedd, individually or combined, do not teach or suggest creating
10 a transaction record corresponding to the input signal. For the element of a
11 transaction record, the examiner cites Gupte, column 9, lines 8-13, which is
12 reproduced in the section entitled "Statement of Facts". The citation describes a list
13 of inputs. A list of input signals is not equivalent to a transaction record. A
14 transaction record is more than just a list of input signals. From the specification of
15 the present application, page 4, lines 17-18, a transaction record holds data relating
16 to a transaction. From page 6, lines 9-11, each transaction record contains an
17 expectation list vector for storing expectation records associated with that
18 transaction record. From page 16, lines 11-13, entries in the transaction record
19 include a Transaction ID. Accordingly, a transaction record is more than just a list
20 of input signals.

1 Gupte and Giedd, individually or combined, do not teach or suggest
2 generating an expected signal corresponding to a transaction record. From the
3 specification of the present invention, page 5, a transaction corresponds to an entire
4 memory operation. From pages 20 and 21, inputs may comprise multiple parts and
5 expected output(s) may not be generated until sufficient parts of the input stimulus
6 are received (multiple input signals). Accordingly, expected outputs are generated
7 based on transactions (the transaction record), not just a single input signal.

8
9 CLAIM 7

10
11 In response to the examiner's rejection of claim 7 under 35 USC § 103(a) as
12 being unpatentable over Gupte and Giedd, appellant's response includes a new
13 argument which has not been previously presented to the examiner, as follows:

14 Claim 7 is as follows: The apparatus of claim 4, wherein said program code
15 for monitoring said at least one input of said agent for said stimulus comprises
16 program code for monitoring at least one input of a memory agent for said
17 stimulus, said stimulus being selected from a group consisting of an initial request
18 to perform a memory operation, a snoop response, and a read response. See, for
19 example, page 5, lines 12-17.

1 Gupte and Giedd, individually or combined, do not teach or suggest
2 monitoring stimuli to a memory agent, and do not teach or suggest a stimulus
3 selected from the group consisting of an initial request to perform a memory
4 operation, a snoop response, and a read response.

5 In the Office Action dated 12/01/2008, page 6, regarding claim 7, for the
6 element of monitoring stimuli to a memory agent, the examiner cites Gupte,
7 column 6, lines 41-64; column 7, lines 20-35, column 8, lines 56-67; column 9,
8 lines 1-57, and column 10, lines 5-10. The cited portions of Gupte have no
9 relevance to what is claimed in claim 7. None of the cited portions of Gupte teach
10 or suggest anything about a memory agent. Column 6, lines 41-64 and column 7,
11 lines 20-35 merely refer to an ASIC, with no suggestion that the ASIC might be a
12 memory agent. Column 8, lines 56-67 are portions of a file containing the I/O
13 specifications of a ASIC, with no suggestion that the ASIC might be a memory
14 agent. Column 9, lines 1-57 and column 10, lines 5-10 discuss the vector capture
15 program during system simulation, with no suggestion that the simulated ASIC
16 might be a memory agent.

17 In the Office Action dated 12/01/2008, page 6, regarding claim 7, last
18 element, the examiner cites Gupte, column 15, lines 3-24. The cited portion of
19 Gupte has no relevance to what is claimed in claim 7. The cited portion of Gupte is
20 discussing which gates in the module should be synthesized or skipped over, and

1 has absolutely no relationship to an initial request to perform a memory operation,
2 a snoop response, or a read response.

3
4 CLAIMS 8-10
5

6 For purposes of this appeal only, claims 9 and 10 stand or fall with claim 8.

7 In response to the examiner's rejection of claim 8 under 35 USC § 103(a) as
8 being unpatentable over Gupte and Giedd, appellant's response includes a new
9 argument which has not been previously presented to the examiner, as follows:

10 Claim 8 is as follows: The apparatus of claim 4, wherein said program code
11 for monitoring said at least one input of said agent for said stimulus comprises
12 program code for identifying said stimulus using correlative information in said
13 stimulus. For example, see page 28, lines 2-13.

14 Gupte and Giedd, individually or combined, do not teach or suggest program
15 code for identifying a stimulus using correlative information from the stimulus.

16 In the Office Action dated 12/01/2008, page 5, the examiner groups claims
17 4, 6, 8, 11 and 22, but the examiner only discusses the limitations of claims 4 and
18 22 without addressing the additional limitations of claim 8. The examiner does not
19 discuss or present any argument for the element of "program code for identifying
20 said stimulus using correlative information in said stimulus". The examiner does

1 not cite Gupte or Giedd for this element. No *prima facie* case for obviousness has
2 been established.

3
4 CLAIMS 11 AND 12
5

6 For purposes of this appeal only, claim 12 stands or falls with claim 11.

7 In response to the examiner's rejection of claim 11 under 35 USC § 103(a) as
8 being unpatentable over Gupte and Giedd, appellant's response includes a new
9 argument which has not been previously presented to the examiner, as follows:

10 Claim 11 is as follows: The apparatus of claim 4, wherein said program code
11 for monitoring said at least one input of said agent for said stimulus comprises
12 program code for gathering said stimulus from a plurality of separately transmitted
13 portions. See, for example, page 21, lines 7-24.

14 Gupte and Giedd, individually or combined, do not teach or suggest program
15 code for gathering a stimulus from a plurality of separately transmitted portions.

16 In the Office Action dated 12/01/2008, page 5, the examiner groups claims
17 4, 6, 8, 11 and 22, but the examiner only discusses the limitations of claims 4 and
18 22 without addressing the additional limitations of claim 11. The examiner does
19 not discuss or present any argument for the element of "program code for gathering
20 said stimulus from a plurality of separately transmitted portions ". The examiner

1 does not cite Gupte or Giedd for this element. No *prima facie* case for obviousness
2 has been established.

3
4 CLAIMS 13 AND 14
5

6 For purposes of this appeal only, claim 14 stands or falls with claim 13.

7 In response to the examiner's rejection of claim 13 under 35 USC § 103(a) as
8 being unpatentable over Gupte and Giedd, appellant's response includes a new
9 argument which has not been previously presented to the examiner, as follows:

10 Claim 13 is as follows: The apparatus of claim 4, wherein said program code
11 for creating a transaction record comprises program code for creating a transaction
12 record to contain information relating to a memory transaction involving said
13 agent. See, for example, page 4, lines 17-20; page 5, lines 12-20; page 6, lines 9-
14 11; page 6, line 33 to page 7, line 6.

15 Gupte and Giedd, individually or combined, do not teach or suggest creating
16 a transaction record to contain information relating to a memory transaction
17 involving said agent.

18 Regarding the element "creating a transaction record to contain information
19 relating to a memory transaction involving said agent", the examiner cites Gupte,
20 column 15, lines 35-50. The cited portion of Gupte has no relevance to what is

1 claimed in claim 13. The cited portion of Gupte describes details of compilation of
2 simulation code, and has nothing to do with transaction records or memory
3 transactions during testing. No *prima facie* case for obviousness has been
4 established.

5
6 CLAIMS 15 - 21

7
8 For purposes of this appeal only, claims 16-21 stand or fall with claim 15.

9 In response to the examiner's rejection of claim 15 under 35 USC § 103(a) as
10 being unpatentable over Gupte and Giedd, appellant's response includes a new
11 argument which has not been previously presented to the examiner, as follows:

12 Claim 15 is as follows: The apparatus of claim 4, wherein said program code
13 for producing said expectation of said event comprises program code for storing
14 expected data associated with said expectation, said expected data being received
15 in a plurality of separate incoming transmissions in said stimulus, said expected
16 data being expected to be transmitted by said agent in a plurality of separate
17 outgoing transmissions in said event. See, for example, page 21, lines 7-25.

18 Gupte and Giedd, individually or combined, do not teach or suggest program
19 code for storing expected data associated with said expectation, said expected data
20 being received in a plurality of separate incoming transmissions in said stimulus,

1 said expected data being expected to be transmitted by said agent in a plurality of
2 separate outgoing transmissions in said event.

3 Regarding claim 15, the examiner cites Gupte, column 18, lines 19-39. The
4 cited portion of Gupte has no relevance to what is claimed in claim 15. The cited
5 portion of Gupte describes execution of an expert system for simulation, and has
6 nothing to do with data associated with an expectation, and nothing to do with the
7 data being received in a plurality of incoming transmissions, and nothing to do
8 with expected data being expected to be transmitted by said agent in a plurality of
9 separate outgoing transmissions.

10
11 CLAIM 24
12

13 In response to the examiner's rejection of claim 24 under 35 USC § 103(a) as
14 being unpatentable over Gupte and Giedd, appellant's response includes a new
15 argument which has not been previously presented to the examiner, as follows:

16 Claim 24 is as follows: The method of claim 1, where the step of signaling
17 an error further comprises signaling an error when said expected output does not
18 occur within a predetermined time. From page 18, lines 23-26, the checker may
19 impose a time limit on event expectations, so that if an event is not generated
20 within the time limit, the checker may signal an error.

1 Gupte and Giedd, individually or combined, do not teach or suggest
2 signaling an error when the expected output does not occur within a predetermined
3 time.

4 In the Office Action dated 12/01/2008, pages 4 and 5, regarding claims 23-
5 28, the examiner states that Gupte does not explicitly teach signaling an error if the
6 agent or device does not produce said output correctly, and asserts that Giedd
7 produces an error if the agent did not produce the output signal correctly. The
8 examiner has not properly characterized the limitations of claim 24. Claim 24 is
9 more specific than just claiming that the agent did not produce the output signal
10 correctly. Claim 24 specifies that the expected output does not occur with a
11 predetermined time. The examiner has not cited any portion of Gupte or Giedd in
12 which a predetermined time for an expected output determines whether there is an
13 error. There is no teaching or suggestion in Gupte or Giedd, individually or
14 combined, for signaling an error when said expected output does not occur within a
15 predetermined time. No *prima facie* case for obviousness has been established.

1 CLAIM 25

2
3 In response to the examiner's rejection of claim 25 under 35 USC § 103(a) as
4 being unpatentable over Gupte and Giedd, appellant's response includes a new
5 argument which has not been previously presented to the examiner, as follows:

6 Claim 25 is as follows: The method of claim 1, where the step of signaling
7 an error further comprises signaling an error when no transaction record can be
8 identified for an output. From page 7, lines 25-29, and page 18, lines 2-4, if no
9 transaction record is found corresponding to a outgoing event, then the checker
10 signals that the event was generated without a triggering stimulus.

11 Gupte and Giedd, individually or combined, do not teach or suggest
12 signaling an error when no transaction record can be identified for an output.

13 In the Office Action dated 12/01/2008, pages 4 and 5, regarding claims 23-
14 28, the examiner states that Gupte does not explicitly teach signaling an error if the
15 agent or device does not produce said output correctly, and asserts that Giedd
16 produces an error if the agent did not produce the output signal correctly. The
17 examiner has not properly characterized the limitations of claim 25. Claim 25 is
18 more specific than just claiming that the agent did not produce the output signal
19 correctly. Claim 25 specifies signaling an error when no transaction record can be
20 identified for an output. The examiner has not cited any portion of Gupte or Giedd

1 in which an error is determined by receiving an output for which there is no
2 corresponding transaction record. There is no teaching or suggestion in Gupte or
3 Giedd, individually or combined, for signaling an error when no transaction record
4 can be identified for an output. No *prima facie* case for obviousness has been
5 established.

6
7 CLAIM 26

8
9 In response to the examiner's rejection of claim 26 under 35 USC § 103(a) as
10 being unpatentable over Gupte and Giedd, appellant's response includes a new
11 argument which has not been previously presented to the examiner, as follows:

12 Claim 26 is as follows: The method of claim 1, where the step of signaling
13 an error further comprises signaling an error when a transaction record for an
14 output is not recognized. From the specification of the present application, page 7,
15 lines 30 - 34, page 21, lines 26-30, if the Transaction ID of outgoing data does not
16 match the Transaction ID of the expected event, then the Transaction ID of the
17 outgoing data is not recognized.

18 Gupte and Giedd, individually or combined, do not teach or suggest
19 signaling an error when a transaction record for an output is not recognized.

1 In the Office Action dated 12/01/2008, pages 4 and 5, regarding claims 23-
2 28, the examiner states that Gupte does not explicitly teach signaling an error if the
3 agent or device does not produce said output correctly, and asserts that Giedd
4 produces an error if the agent did not produce the output signal correctly. The
5 examiner has not properly characterized the limitations of claim 26. Claim 26 is
6 more specific than just claiming that the agent did not produce the output signal
7 correctly. Claim 26 specifies signaling an error when a transaction record for an
8 output is not recognized. The examiner has not cited any portion of Gupte or Giedd
9 in which an error is determined by receiving an output for which there is no
10 corresponding transaction record. There is no teaching or suggestion in Gupte or
11 Giedd, individually or combined, for signaling an error when a transaction record
12 for an output is not recognized. No *prima facie* case for obviousness has been
13 established.

14
15 CLAIM 27
16

17 In response to the examiner's rejection of claim 27 under 35 USC § 103(a) as
18 being unpatentable over Gupte and Giedd, appellant's response includes a new
19 argument which has not been previously presented to the examiner, as follows:

1 Claim 27 is as follows: The method of claim 1, where the step of signaling
2 an error further comprises signaling an error when a transaction record for an
3 output signal corresponds to said transaction record corresponding to said input
4 signal, but said output signal is not expected. From the specification of the present
5 application, page 19, lines 25-27, if the expectation record of outgoing data does
6 not correspond to the transaction ID, then the outgoing data was not expected.

7 Gupte and Giedd, individually or combined, do not teach or suggest
8 signaling an error when a transaction record for an output signal corresponds to the
9 transaction record corresponding to the input signal, but the output signal is not
10 expected.

11 In the Office Action dated 12/01/2008, pages 4 and 5, regarding claims 23-
12 28, the examiner states that Gupte does not explicitly teach signaling an error if the
13 agent or device does not produce said output correctly, and asserts that Giedd
14 produces an error if the agent did not produce the output signal correctly. The
15 examiner has not properly characterized the limitations of claim 27. Claim 27 is
16 more specific than just claiming that the agent did not produce the output signal
17 correctly. Claim 27 specifies signaling an error when a transaction record for an
18 output signal corresponds to said transaction record corresponding to said input
19 signal, but said output signal is not expected. The examiner has not cited any
20 portion of Gupte or Giedd in which an error is determined by whether a transaction

1 record for an output signal corresponds to a transaction record corresponding to an
2 input signal, but the output signal is not expected. There is no teaching or
3 suggestion in Gupte or Giedd, individually or combined, for signaling an error
4 when a transaction record for an output signal corresponds to said transaction
5 record corresponding to said input signal, but said output signal is not expected. No
6 *prima facie* case for obviousness has been established.

7
8 CLAIM 28

9
10 In response to the examiner's rejection of claim 28 under 35 USC § 103(a) as
11 being unpatentable over Gupte and Giedd, appellant's response includes a new
12 argument which has not been previously presented to the examiner, as follows:

13 Claim 28 is as follows: The method of claim 1, where the step of signaling
14 an error further comprises signaling an error when a transaction record for an
15 output signal corresponds to said transaction record corresponding to said input
16 signal, but said output signal is generated before said input signal is complete.

17 From the specification of the present application, page 21, line 32 through page 22,
18 line 2, and figure 4, 96, the checker may generate an error indicating that an event
19 was created before the stimulus was complete.

1 Gupte and Giedd, individually or combined, do not teach or suggest
2 signaling an error when a transaction record for an output signal corresponds to
3 said transaction record corresponding to said input signal, but said output signal is
4 generated before said input signal is complete.

5 In the Office Action dated 12/01/2008, pages 4 and 5, regarding claims 23-
6 28, the examiner states that Gupte does not explicitly teach signaling an error if the
7 agent or device does not produce said output correctly, and asserts that Giedd
8 produces an error if the agent did not produce the output signal correctly. The
9 examiner has not properly characterized the limitations of claim 28. Claim 28 is
10 more specific than just claiming that the agent did not produce the output signal
11 correctly. Claim 28 specifies signaling an error when a transaction record for an
12 output signal corresponds to said transaction record corresponding to said input
13 signal, but said output signal is generated before said input signal is complete. The
14 examiner has not cited any portion of Gupte or Giedd in which an error is
15 determined by whether a transaction record for an output signal corresponds to said
16 transaction record corresponding to said input signal, but said output signal is
17 generated before said input signal is complete. There is no teaching or suggestion
18 in Gupte or Giedd, individually or combined, for signaling an error when a
19 transaction record for an output signal corresponds to said transaction record

1 corresponding to said input signal, but said output signal is generated before said
2 input signal is complete. No *prima facie* case for obviousness has been established.

3
4 **CONCLUSION**

5
6 In view of the above, the applicant respectfully requests that the examiner's
7 final rejection of claims 1, 4, and 6-28 be overruled and withdrawn by the Board,
8 and that the application be allowed to issue as a patent with all pending claims.

9
10 Respectfully submitted,

11
12 KLAAS, LAW, O'MEARA & MALKIN, P.C.

13
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19
20 Date: January 27, 2009

APPENDIX (A)

CLAIMS

1. (rejected) A computer implemented method of verifying events generated by an agent, said method comprising:

detecting an input signal at an input of said agent;

creating a transaction record corresponding to said input signal;

generating an expected output signal, corresponding to said transaction

record, based at least in part on said input signal; and

signaling an error when said agent does not generate said expected output signal corresponding to said transaction record.

2-3 (canceled)

4. (rejected) An apparatus for producing expectations to verify events generated by an agent; comprising:

a. at least one computer readable medium; and

b. computer readable program code stored on said at least one computer readable medium, said computer readable program code comprising:

- 1 i. program code for monitoring at least one input of said agent for
2 a stimulus;
- 3 ii. program code for creating a transaction record corresponding to
4 said stimulus;
- 5 iii. program code for generating an expectation of an event,
6 corresponding to said transaction record, based at least in part
7 on said stimulus, wherein said event is expected to be generated
8 by said agent as a result of said stimulus; and
- 9 iv. program code for signaling an error when said agent does not
10 generate said event corresponding to said transaction record.

11

12 5. (Cancelled)

13

14 6. (rejected) The apparatus of claim 4, further comprising program code for
15 signaling an error if said event is detected at said at least one output for which no
16 expectation has been produced.

17

18 7. (rejected) The apparatus of claim 4, wherein said program code for
19 monitoring said at least one input of said agent for said stimulus comprises
20 program code for monitoring at least one input of a memory agent for said

1 stimulus, said stimulus being selected from a group consisting of an initial request
2 to perform a memory operation, a snoop response, and a read response.

3
4 8. (rejected) The apparatus of claim 4, wherein said program code for
5 monitoring said at least one input of said agent for said stimulus comprises
6 program code for identifying said stimulus using correlative information in said
7 stimulus.

8
9 9. (rejected) The apparatus of claim 8, wherein said correlative information
10 comprises a transaction identification.

11
12 10. (rejected) The apparatus of claim 8, wherein said correlative information
13 comprises an address of memory being accessed by said stimulus and an identity of
14 a source of said stimulus.

15
16 11. (rejected) The apparatus of claim 4, wherein said program code for
17 monitoring said at least one input of said agent for said stimulus comprises
18 program code for gathering said stimulus from a plurality of separately transmitted
19 portions.

1 12. (rejected) The apparatus of claim 11, wherein said program code for
2 gathering said stimulus from said plurality of separately transmitted portions
3 comprises program code for establishing a watch list, said watch list containing an
4 entry for each stimulus for which said separately transmitted portions are being
5 awaited, and wherein said program code for monitoring said at least one input of
6 said agent for said stimulus comprises:

7 program code for detecting one of said separately transmitted portions
8 at said at least one input;

9 program code for searching said watch list for said stimulus for which
10 said one of said separately transmitted portions was being awaited; and

11 program code for adding said one of said separately transmitted
12 portions to said stimulus.

13
14 13. (rejected) The apparatus of claim 4, wherein said program code for creating
15 a transaction record comprises program code for creating a transaction record to
16 contain information relating to a memory transaction involving said agent.

17
18 14. (rejected) The apparatus of claim 13, wherein said program code for
19 producing said expectation of said event further comprises:

1 program code for creating an expectation record to contain
2 information relating to an expected event from said agent; and
3 program code for associating said expectation record with said
4 transaction record.

5
6 15. (rejected) The apparatus of claim 4, wherein said program code for
7 producing said expectation of said event comprises program code for storing
8 expected data associated with said expectation, said expected data being received
9 in a plurality of separate incoming transmissions in said stimulus, said expected
10 data being expected to be transmitted by said agent in a plurality of separate
11 outgoing transmissions in said event.

12
13 16. (rejected) The apparatus of claim 15, further comprising:

14 program code for comparing said expected data with actual data in
15 said event;

16 program code for signaling an error if said expected data does not
17 match said actual data; and

18 program code for signaling an error if said actual data is not expected.
19

1 17. (rejected) The apparatus of claim 15, further comprising program code for
2 signaling an error if any of said plurality of separate outgoing transmissions is
3 detected before all of said plurality of separate incoming transmissions have been
4 received.

5
6 18. (rejected) The apparatus of claim 15, wherein said program code for
7 monitoring said at least one output of said agent for said event begins monitoring
8 said at least one output for said plurality of separate outgoing transmissions as soon
9 as a first of said plurality of separate incoming transmissions has been received.

10
11 19. (rejected) The apparatus of claim 18, wherein said program code for storing
12 said expected data comprises identifying said first of said plurality of separate
13 incoming transmissions using correlative information in said first of said plurality
14 of separate incoming transmissions and further comprising identifying subsequent
15 transmissions of said plurality of separate incoming transmissions by their being
16 contiguously transmitted on a same input of said agent as said first.

17
18 20. (rejected) The apparatus of claim 19, wherein said same input of said agent
19 comprises a same physical and virtual input channel.

1 21. (rejected) The apparatus of claim 18, wherein said program code for storing
2 said expected data comprises identifying each of said plurality of separate
3 incoming transmissions using correlative information in said each of said plurality
4 of separate incoming transmissions to enable gathering and sorting of interleaved
5 transmissions belonging to different stimuli.

6
7 22. (rejected) An apparatus for testing an agent in a computer system,
8 comprising:

9 means for detecting at least one incoming message as it is received by
10 said agent;

11 means for generating a transaction record corresponding to said
12 incoming message;

13 means for generating at least one expected outgoing message,
14 correlated to said transaction record, that should be produced by said agent
15 in response to said incoming message, wherein said at least one expected
16 outgoing message is generated at least in part based on said at least one
17 incoming message; and

18 means for signaling an error when said agent does not generate said
19 expected outgoing message corresponding to said transaction record.

20

1 23. (rejected) The method of claim 1, where the step of signaling an error further
2 comprises signaling an error when said expected output does not occur.

3
4 24. (rejected) The method of claim 1, where the step of signaling an error further
5 comprises signaling an error when said expected output does not occur within a
6 predetermined time.

7
8 25. (rejected) The method of claim 1, where the step of signaling an error further
9 comprises signaling an error when no transaction record can be identified for an
10 output.

11
12 26. (rejected) The method of claim 1, where the step of signaling an error further
13 comprises signaling an error when a transaction record for an output is not
14 recognized.

15
16 27. (rejected) The method of claim 1, where the step of signaling an error further
17 comprises signaling an error when a transaction record for an output signal
18 corresponds to said transaction record corresponding to said input signal, but said
19 output signal is not expected.

1 28. (rejected) The method of claim 1, where the step of signaling an error further
2 comprises signaling an error when a transaction record for an output signal
3 corresponds to said transaction record corresponding to said input signal, but said
4 output signal is generated before said input signal is complete.

5

1 APPENDIX (B)

2 CLAIM SUPPORT AND DRAWING ANALYSIS

3
4 1. A computer implemented method {Figs 2-8} of verifying events
5 generated by an agent {Fig. 1, 12}, said method comprising:

6 detecting {Fig. 2, 50} an input signal at an input of said agent {Page 4, lines
7 13-16};

8 creating {Fig. 2, 50} a transaction record {Page 4, lines 17-20; Page 5, lines
9 12-20; Page 6, lines 9-11, Page 16, lines 11-13} corresponding to said input
10 signal;

11 generating {Fig. 2, 52} an expected output signal, corresponding to said
12 transaction record {Page 4, lines 17-26; Page 6, lines 9-11}, based at least in part
13 on said input signal ; and

14 signaling {Fig. 2, 60, 66; Fig. 4, 94, 100, 104; Fig. 6, 136; Fig. 8, 166, 172}
15 an error when said agent does not generate said expected output signal
16 corresponding to said transaction record {Page 7, lines 25-34; Page 18, lines 3-4,
17 lines 23-26; Page 19, lines 25-27; Page 21, lines 26-30; Page 21, line 32 to Page
18 22, line 2}.

- 1 4. An apparatus for producing expectations to verify events generated by an
2 agent; comprising:
- 3 a. at least one computer readable medium **{page 32, line 23 through page**
4 **33, line 14}{not explicitly illustrated in the figures}; and**
- 5 b. computer readable program code stored on said at least one computer
6 readable medium, said computer readable program code comprising:
- 7 i. program code for monitoring at least one input of said agent for
8 a stimulus **{Fig. 2, 50} {Page 4, lines 13-16};**
- 9 ii. program code for creating a transaction record corresponding to
10 said stimulus **{Fig. 2, 50} {Page 4, lines 17-20; Page 5, lines**
11 **12-20; Page 6, lines 9-11, Page 16, lines 11-13}**
- 12 iii. program code for generating an expectation of an event,
13 corresponding to said transaction record, based at least in part
14 on said stimulus, wherein said event is expected to be generated
15 by said agent as a result of said stimulus **{Fig. 2, 52} {Page 4,**
16 **lines 17-26; Page 6, lines 9-11}; and**
- 17 iv. program code for signaling an error when said agent does not
18 generate said event corresponding to said transaction record
19 **{Fig. 2, 60, 66} {Page 7, lines 25-34; Page 18, lines 3-4, lines**

23-26; Page 19, lines 25-27; Page 21, lines 26-30; Page 21,
line 32 to Page 22, line 2}.

7. The apparatus of claim 4, wherein said program code for monitoring said at least one input of said agent for said stimulus comprises program code for monitoring at least one input of a memory agent for said stimulus {Page 9, lines 8-10} {not explicitly illustrated in the figures}, said stimulus being selected from a group consisting of an initial request to perform a memory operation, a snoop response, and a read response {Page 5, lines 5-7} {not explicitly illustrated in the figures}.

8. The apparatus of claim 4, wherein said program code for monitoring said at least one input of said agent for said stimulus comprises program code for identifying said stimulus using correlative information in said stimulus {Page 28, lines 2-13} {not explicitly illustrated in the figures}.

11. The apparatus of claim 4, wherein said program code for monitoring said at least one input of said agent for said stimulus comprises program code for gathering said stimulus from a plurality of separately transmitted portions {page 21, lines 7-24} {not explicitly illustrated in the figures}.

1
2 13. The apparatus of claim 4, wherein said program code for creating a
3 transaction record comprises program code for creating a transaction record to
4 contain information relating to a memory transaction involving said agent {Page 4,
5 lines 17-20; Page 5, lines 12-20; Page 6, lines 9-11; Page 6, line 33 to Page 7,
6 line 6} {not explicitly illustrated in the figures}.

7
8 15. The apparatus of claim 4, wherein said program code for producing said
9 expectation of said event comprises program code for storing expected data
10 associated with said expectation, said expected data being received in a plurality of
11 separate incoming transmissions in said stimulus, said expected data being
12 expected to be transmitted by said agent in a plurality of separate outgoing
13 transmissions in said event {Page 21, lines 7-25} {not explicitly illustrated in the
14 figures}.

15
16 24. The method of claim 1, where the step of signaling an error further
17 comprises signaling an error when said expected output does not occur within a
18 predetermined time {Page 18, lines 23-26} {not explicitly illustrated in the
19 figures}.

1 25. The method of claim 1, where the step of signaling an error further
2 comprises signaling an error when no transaction record can be identified for an
3 output {Page 7, lines 25-29; page 18, lines 2-4} {not explicitly illustrated in the
4 figures}.

5
6 26. The method of claim 1, where the step of signaling an error further
7 comprises signaling an error when a transaction record for an output is not
8 recognized {Fig. 4, 94} {Page 7, lines 30 - 34; Page 21, lines 26-30}.

9
10 27. The method of claim 1, where the step of signaling an error further
11 comprises signaling an error when a transaction record for an output signal
12 corresponds to said transaction record corresponding to said input signal, but said
13 output signal is not expected {Fig. 2, 66} {Page 19, lines 25-27}.

14
15 28. The method of claim 1, where the step of signaling an error further
16 comprises signaling an error when a transaction record for an output signal
17 corresponds to said transaction record corresponding to said input signal, but said
18 output signal is generated before said input signal is complete {Fig. 4, 96} {Page
19 21, line 32 through Page 22, line 2}.

1
2 **APPENDIX (C)**

3 **MEANS OR STEP PLUS FUNCTION ANALYSIS**
4

5 22. An apparatus for testing an agent **{Fig. 1, 12}** in a computer system,
6 comprising:

7 means for detecting **{not explicitly illustrated in the figures}** at least
8 one incoming message as it is received by said agent **{Page 4, lines 13-16}**;

9 means for generating **{not explicitly illustrated in the figures}** a
10 transaction record **{Page 4, lines 17-20; Page 5, lines 12-20; Page 6, lines**
11 **9-11; Page 16, lines 11-13}** corresponding to said incoming message;

12 means for generating **{not explicitly illustrated in the figures}** at
13 least one expected outgoing message, correlated to said transaction record
14 **{Page 4, lines 17-26; Page 6, lines 9-11}**, that should be produced by said
15 agent in response to said incoming message, wherein said at least one
16 expected outgoing message is generated at least in part based on said at least
17 one incoming message; and

18 means for signaling **{not explicitly illustrated in the figures}** an
19 error when said agent does not generate said expected outgoing message
20 corresponding to said transaction record **{Page 7, lines 25-34; Page 18,**

1 **lines 3-4, lines 23-26; Page 19, lines 25-27; Page 21, lines 26-30; Page 21,**
2 **line 32 to Page 22, line 2}.**

3

1

2

APPENDIX (D)

3

EVIDENCE

4

None

5

6

1

2

APPENDIX (E)

3

RELATED CASES

4 None